

Amendments to the Specification:

Please replace paragraph [0025] with the following amended paragraph:

[0025] The present invention provides methods, apparatuses and systems allowing for dynamic bandwidth management schemes responsive to the state of a plurality of access links in redundant network topologies. In one embodiment, the present invention provides a bandwidth management device that periodically queries routing systems associated with access links, conceptually grouped into a virtual access link, to monitor that load of the access links and, depending on the detected load, adjusts ~~adjust~~ the configuration of the bandwidth management device to avoid overloading one or more of the access links. Embodiments of the present invention increase ~~increases~~ network efficiency and help network traffic to flow more smoothly with higher throughput. In one embodiment, the dynamic link control functionality is invoked when any given access link reaches a threshold capacity level. Assuming that network traffic will scale in the same ratio as presently observed, the present invention calculates the maximum traffic that can be let through so that no network interface or access link is overloaded.

Please replace paragraph [0035] with the following amended paragraph.

[0035] Figures 2A, 2B, 2C and 2D illustrate various possible network environments in which embodiments of the present invention may operate. Figure 2A illustrates a computer network environment where access links 21a, 21b are connected to separate interfaces 97 of the same router 22, which connects Local Area Network (LAN) 40 to computer network 50. As Figure 2A shows, the network environment includes

bandwidth management device 30 operatively connected to a communication path between LAN 40 and router 22. LAN 40 can be implemented by a variety of different network devices, such as Ethernet Switches, Bridges and Hubs. In addition, although Figure 2A shows two access links 21a, 21b, router 22 can include additional interfaces to support additional access links. Figure 2B provides a computer network environment including first and second routers 22a, 22b corresponding to respective access links 21a, 21b. As Figure 2B illustrates, LAN switches 23 operably connect routers 22a, 22b to bandwidth management device 30 disposed on the path between access links 21a, 21b and computer network 140. In one embodiment, computer network 140 is an enterprise WAN comprising a plurality of LAN segments implemented by one or more Ethernet switches 23. Figure 2C shows a computer network environment comprising first and second computer networks 140 and 240. As Figure 2C illustrates, bandwidth management device 30 is disposed on the path between computer network 140 and access links 21a, 21b; however, bandwidth management device 30 does not encounter network traffic flowing between computer network 240 and computer network 50. Lastly, Figure 2D sets forth a computer network environment featuring a redundant network topology, that includes first and second access links 21a, 21b; routers 22a, 22b; and network devices 30a, 30b. Access links 21a, 21b operably connect computer network 140 to computer network 50. Access links 21a, 21b may be uni-directional transmission lines or bi-directional transmission lines. Access links 21a, 21b may further support full-duplex data transmission or half-duplex data transmission. In one embodiment, computer network 50 is an open computer network, such as the Internet. Computer network 50, however, can be any suitable network, including a Local Area Network, a Wide Area Network, and the like. As one skilled in the art will recognize,

the network topology can be expanded to include additional access links and associated network devices. LAN switches 23 include a plurality of ports to which end systems, such as client computers 42 and servers 44, and intermediate systems, such as routers and other switches, are connected. LAN switches 23 receive packets on a given port and forward the packets to other network devices on selected ports. In one embodiment, LAN switch 23 is an Ethernet-based (IEEE 802.3) switch.